Background

In 2013, the International Rice Research Institute (IRRI) and the Philippine Rice Research Institute (PhilRice), with support from the Philippine Department of Agriculture, launched Rice Crop Manager (RCM) to provide personalized advice to farmers on crop and location-specific nutrient management. RCM is a decision support tool that enables extension workers to use a computer or smartphone to provide farmers with crop management recommendations matching their field conditions.

RCM has expanded its capabilities to provide advisory services through a complementary suite of tools that are integrated into one digital platform known as Rice Crop Manager Advisory Service (RCMAS).

Personalized advice on crop and location-specific nutrient management is provided to farmers through a one-page print-out and short messaging service (SMS) to improve and guide crop management. Data collected through RCMAS is securely stored in an interoperable database. In 2021, RCMAS was optimized as a fully integrated platform, RCMAS version 4.0, making the application more user-friendly and interoperable with other digital agriculture platforms.

The Challenge

Rice fields in Asia are often small but possess great variability in terms of yields, characteristics, and farmer practices. Fields vary in crop variety, yield level, and fertility level. Farmers differ in their access to resources and technologies. As such, field- and farmer-specific crop and nutrient recommendations are needed to optimize yields and profits.

How does it work?

RCMAS 4.0 works in the following manner:

1. Extension workers download RCMAS 4.0 on their devices, then register farmers and their fields’ information on the application.
2. Farmers receive a unique farmer ID number. The field size is measured using Global Positioning System (GPS) and is assigned a corresponding field ID. ID cards for registered farmers are printed and distributed.
3. Before the cropping season, extension workers interview farmers about their practices for the upcoming cropping season.
4. Farmers receive a unique recommendation on nutrient and crop management, including the right source, timing, and amount of fertilizers to be applied. The seed rate, weed management, crop health management, and safe alternate wetting and drying (SafeAWD) are also included in the recommendation based on field conditions.
5. During the cropping season, SMS advisories containing the recommended practices are sent to farmers’ registered phone numbers.
6. Extension workers use analytics to review farmers’ records.

Results

Since RCM was launched in 2013, farmers across the country have greatly benefited from the field-specific recommendations provided by the application.

- Over 2.6 million RCM recommendations have been generated across 16 rice-growing regions in the Philippines.
- The use of RCM recommendations provided an average yield increase of 0.4 tons (400 kg) per crop per hectare, which is equivalent to about USD100/ha/cropping season added net benefit.
- Approximately 167,000 farmers and 269,000 fields has been registered nationwide. Almost 116,000 fields (43% of registered fields) were measured using a global positioning system (GPS) equivalent to 77,000 hectares.
- Approximately 7,000 users were registered and 3,700 AEWs trained.
- RCMAS has been included in the Philippines Rice Road Map, which sets the targets and strategies for achieving rice production to 6.0 tons/hectare by 2022.

(Results were generated from https://phapps.irri.org/ph/rasstat. All statistics are presented as of June 30, 2021)
Lessons Learned and Recommendations

IRRI continues to gather lessons from field implementers and partner agencies:

• **Government partnership and ownership take time.** Strong connection and commitment with the Department of Agriculture and relevant agencies (local government units) are essential to the deployment and scale of ICT-based decision support tools. However, this requires years of relationship building and collaborative engagement to ensure that all relevant stakeholders are involved.

• **Integrating ICT tools into the day-to-day activities of agricultural extension workers can be challenging.** Government agricultural extension workers deal with many responsibilities catering to the agriculture, aquatic, and natural resources sectors. Meanwhile, the dissemination mechanism of RCMAS relies on agricultural extension to deliver research information to farmers. The RCMAS team is working to better incorporate RCMAS as a seamless part of their duties by professionalizing extension services or transforming them into “knowledge workers” to accelerate the impact of ICT tools on farmers’ productivity.

• **Continued research provides strong science-based, validated content.** While the core science behind RCMAS remains sound, continual validation and enhancement of the RCMAS capacity for more accurate recommendations are also important as more data on rice production is collected from farmers through the platform. IRRI works closely with PhilRice, a partnership that has helped to identify research gaps and develop actionable, easy-to-use farming advice.

• **Internet connectivity limits widespread scale.** As a web-based decision tool, the Philippines’ weak or limited internet connectivity remains one of the primary limitations to large-scale dissemination. Though offline versions of RCM Advisory Service apps are available, bringing farmers to a place with reliable internet connectivity to ensure timely delivery of recommendations continues to limit the program’s reach.

Next Steps

The next few years will be critical in the overall success, sustainability, scale and impact of RCMAS as IRRI transitions the program to the Department of Agriculture (DA) and considers how to use the lessons of RCM Philippines in other geographies across Africa, South Asia and Southeast Asia.

• **Transitioning RCM management, operations, research and dissemination to the Philippines Department of Agriculture.** By the end of 2021, IRRI will completely transition the RCMAS platform to the DA, formally institutionalizing it within the day-to-day operations and budget as part of their vision for a “rice-secure Philippines”.

• **Expansion to other geographies.** RCMAS in the Philippines serves as a model of how science can be translated into results through access to evidence-based information using technology-supported platforms. The lessons and experiences in the Philippines from both research and dissemination can provide valuable insights on the most appropriate pathways for deployment.

Our Partners

For more information, visit [https://rcm.da.gov.ph/](https://rcm.da.gov.ph/)

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